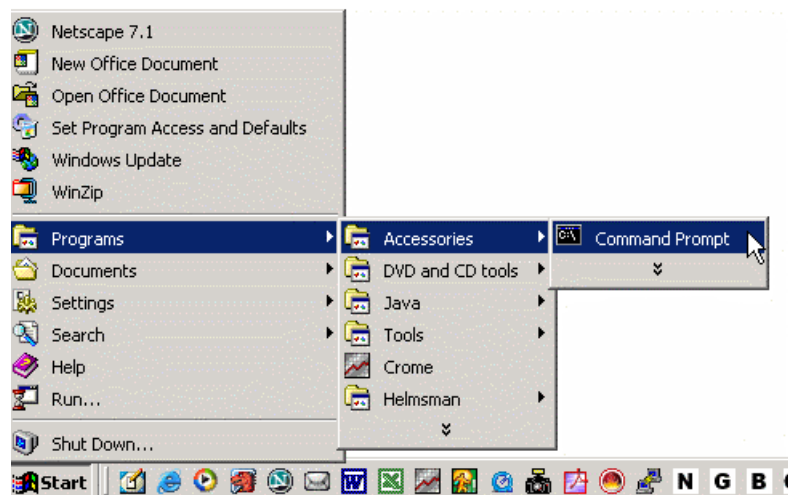


CROME Firewall test - direct access to port 1113 (database)

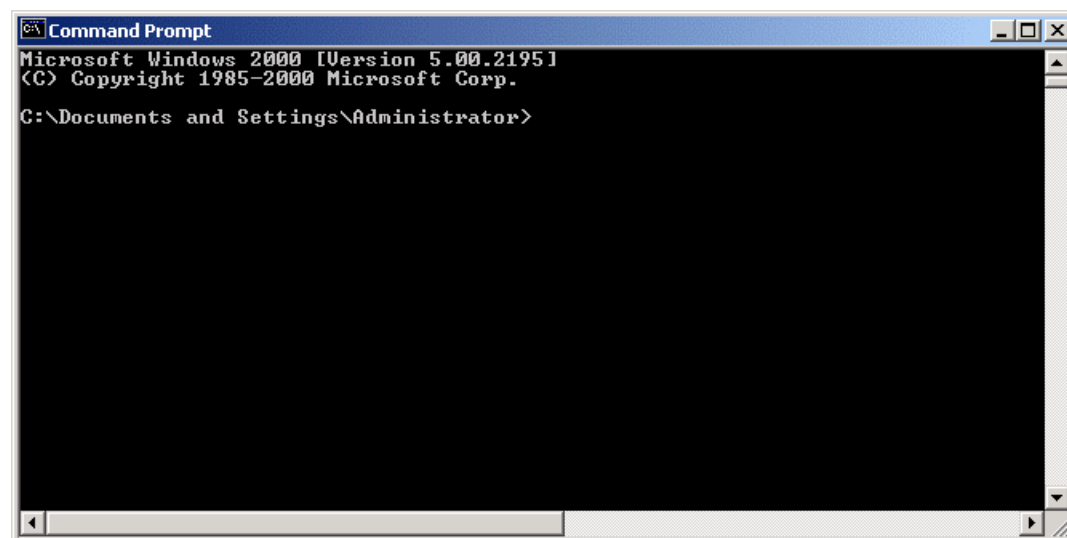
Step 1.

You can start a DOS shell and run telnet to test direct PISQL (Quantum's database access portability layer) from a Windows client host as follows:



Step 2.

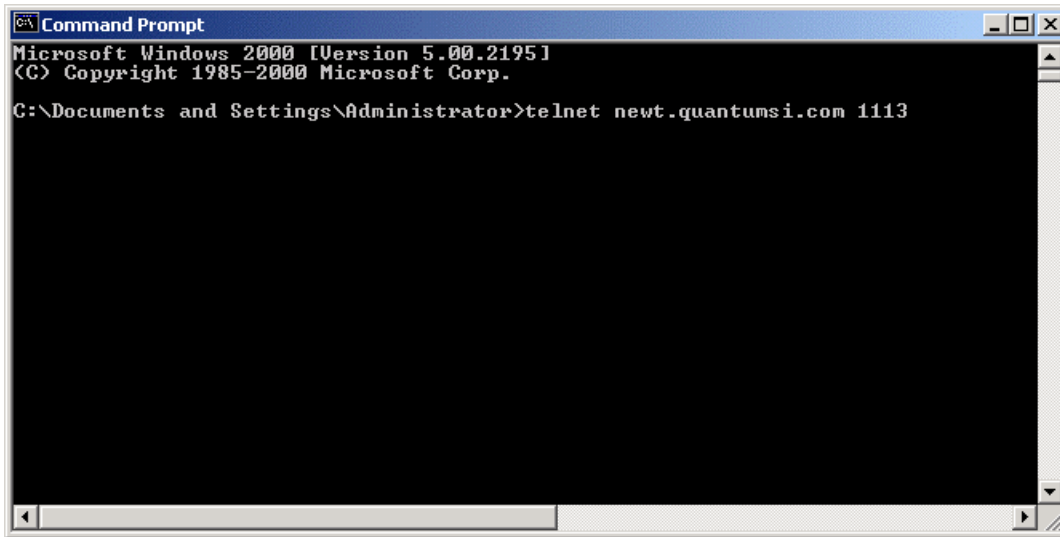
At this point you will get a DOS window



Step 3.

Now type the below command in "bold" (cut-n-paste the below line) and make sure you enter a newline or carriage return.

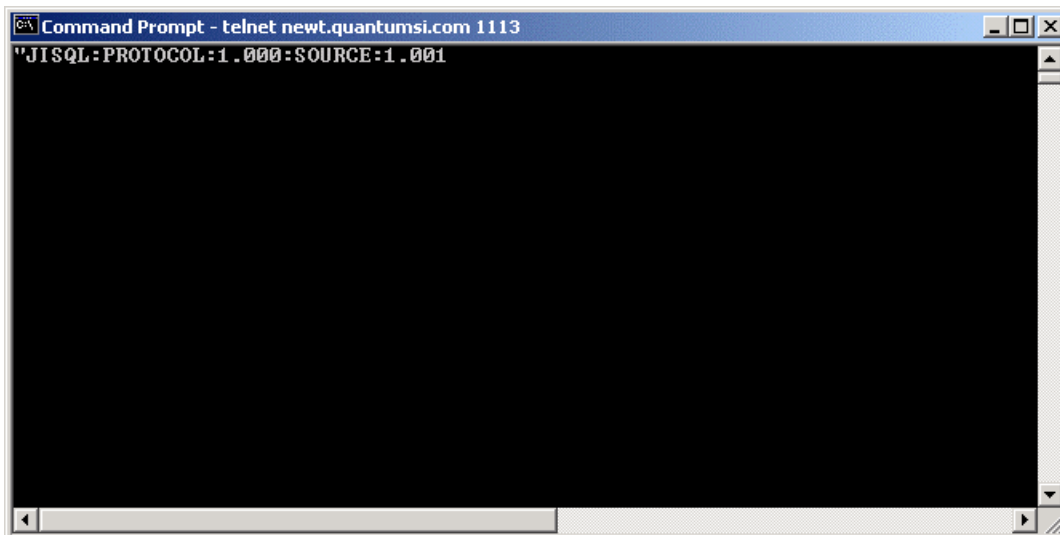
telnet newt.quantumsi.com 1113



```
Command Prompt
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.
C:\Documents and Settings\Administrator>telnet newt.quantumsi.com 1113
```

Step 4.

Hit a single carriage return (the screen will clear) and if your system has direct access to port 1113 the screen will print a string like "JISQL:PROTOCOL:1.000:SOURCE:1.001" - this shows that you will be able to connect to the DATABASE on newt.quantumsi.com.



```
Command Prompt - telnet newt.quantumsi.com 1113
"JISQL:PROTOCOL:1.000:SOURCE:1.001
```

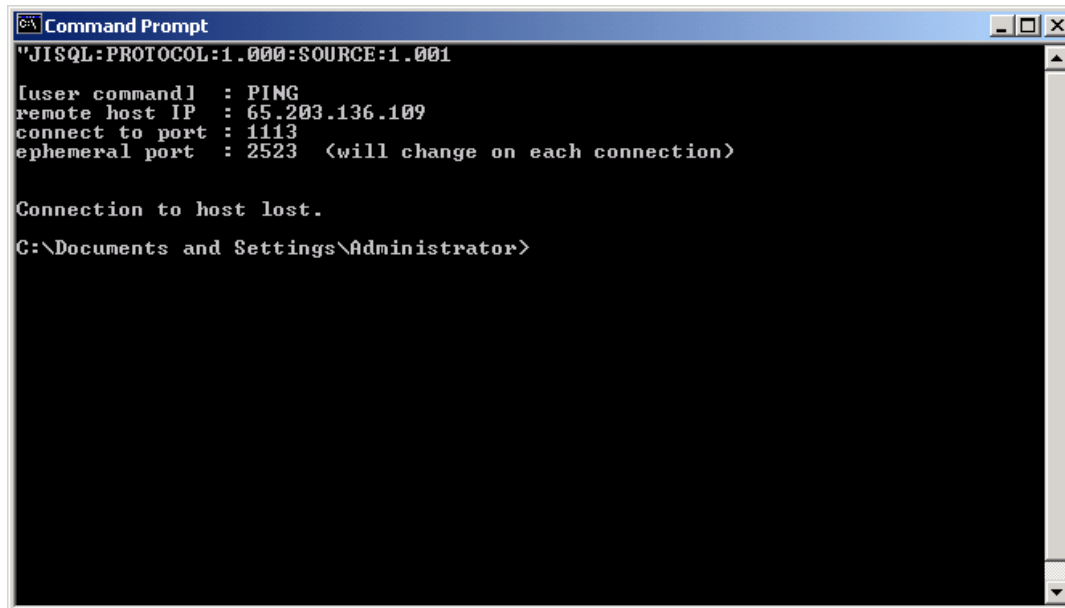
If you see messages like "Connecting To newt.quantumsi.com...Could not open a connection to host on port 1113 : Connect failed" this is indicative of a firewall issue.

Step 5.

At this point we have only verified that you can establish the initial a connection to port 1113, your firewall may still block bi-directional communication on the established TCP/IP session (established in Step 4 above).

Now type the below command in "bold" (cut-n-paste the below line) and make sure you enter a newline or carriage return.

PING



```
Command Prompt
"JISQL:PROTOCOL:1.000:SOURCE:1.001
[user command] : PING
remote host IP  : 65.203.136.109
connect to port : 1113
ephemeral port  : 2523 <will change on each connection>

Connection to host lost.
C:\Documents and Settings\Administrator>
```

Note this command MUST be the only characters typed i.e. PING followed by a carriage return. In addition you may not even see the characters that you type.

The response to your 'PING' test will be a four line informational block that proves that you can both send and receive data on the negotiated ephemeral port for your TCP/IP session. After sending the data back to the client the server will close the established communications channel and your client telnet session will disconnect.

Finished.

Now just close the window (click on the X in the upper right).

Details of this protocol and this test.

CROME communicates to the database server via a stateful TCP/IP session established to port 1113. Port 1113 needs to be opened as a standard TCP/IP stateful port, such that it can form a communications channel in a bi-directional fashion on a "high" port number. This is typical for, say, telnet connections, but not for http connections which are stateless. Once a remote client connects to port 1113 a higher port number is automatically assigned for bi-directional communication. This "high port number" is known as a ephemeral port and is typical paradigm for client server TCP/IP communication.

In general The CROME protocol (or PISQL) running on port 1113 is a compressed binary protocol and is not subject to human interaction. However the very first command can be a PING following by a carriage return. In this event the binary protocol is circumvented and a full proof of bi-directional connectivity is performed.

If you type PING (followed by a newline) and then receive information like the below you have verified the required direct access to port 1113 (database):

```
[user command] : PING
remote host IP  : 65.203.136.109
connect to port : 1113
ephemeral port  : 2523 (will change on each connection)
```

```
Connection to host lost.
```

The above text block shows a command of 'PING' was received from the remote client with an IP address of 65.203.136.109 to the server listing on port 1113. The initial session was established via TCP/IP port 1113 and a subsequent ephemeral port of 2523 was assigned for the ensuing bi-directional communications session between client and server. After the server sends back the above information to the client it will close the communications channel and thus the client telnet session is disconnected.

It is possible that you can get through steps 1, 2, 3 and 4 but fail on Step 5. This is usually an indication that you have improperly configured your firewall. Just keep in mind that the PISQL protocol running on port 1113 operates just like a telnet client server sever connection (but at a port 1113 instead of telnet's port 23)

For more information on TCP and Ephemeral ports:

```
http://www.ncftp.com/ncftpd/doc/misc/ephemeral\_ports.html
http://en.wikipedia.org/wiki/Ephemeral\_port
http://en.wikipedia.org/wiki/List\_of\_TCP\_and\_UDP\_port\_numbers
```

For more information on "stateful" firewalls:

```
http://en.wikipedia.org/wiki/Firewall
http://en.wikipedia.org/wiki/Firewall#Second\_generation\_-\_stateful\_filters
http://www.faqs.org/faqs/firewalls-faq/
http://www2.rad.com/networks/2001/firewall/index.htm
```